

PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF : Richard G. Henry
FOR : ZERO VOLITILE ORGANIC
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Cleveland, Ohio 44114-2518

PETITION TO MAKE SPECIAL UNDER 37 C.F.R. § 1.102(c)

Assistant Commissioner of Patents
Washington, D.C. 20231

Dear Sir:

Applicant hereby petitions under 37 C.F.R. § 1.102(c) to give the above-identified application a special status as the present application relates to an invention which will materially enhance the quality of the environment.


Specifically, the present invention relates to maintenance of air quality by reducing emission of harmful ozone depleting volatile organic chemicals into the atmosphere.

More particularly, this invention pertains to blends that reduce the atmospheric reactivity of some high volatile organic compounds. The invention is particularly applicable to solvent blends and solvent/resin blends that combine volatile organic compounds with newly discovered zero volatile organic compounds for use adhesives, coatings, inks, cleaning and blowing agents and the like and will be described with particular reference thereto. However, it will be appreciated that the invention may be advantageously employed in other environments and applications.

EXPRESS MAIL CERTIFICATE

I hereby certify that these accompanying papers are being deposited with the United States Postal Service "Express Mail Post Office To Addressee" service under 37 C.F.R. 1.10 and is addressed to the Assistant Commissioner For Patents, Box Patent Application, Washington, D.C. 20231 on 2/29/00. EXPRESS MAIL NO.: EL530713922US

Name


Charles D. Dwyer

Heretofore, hydrocarbon-based solvents have been used to dissolve organic materials in many industrial applications. However, recently, hydrocarbon-based solvents have fallen out of favor because they have been classified by the United States Environmental Protection Agency and other international regulatory bodies as materials that contribute to the formation of ground based ozone or smog. This has created a need for other types of solvents for the production of coatings, adhesives, inks and the like.

Upon evaporation, a highly-reactive, hydrocarbon-based solvent reacts with hydroxyl radicals and ultraviolet light very close to the ground to form a photochemical smog that is considered harmful and in some cases dangerous. Some cities have severe smog which reduces visibility and actually causes "ozone alerts." In part, the smog is caused by hydrocarbon emissions from cars. However, another major contributor is industrial use of hydrocarbon-based solvents such as hexane and toluene.

For the purpose of ozone exceedence in cities throughout the United States, a reactivity based formulation scheme will also be described which will make use of low atmospheric reactivity solvents by themselves or in combination with high reactivity solvents. These solvents and solvent blends can be used to dissolve resins for adhesives, inks and coatings, or used as cleaning agents and in the process reduce the amount of ozone formed in the lower atmosphere.

The benchmark for desired reaction rates of hydrocarbon-based compounds is ethane. If a compound has a reaction rate with the hydroxyl radical and ultraviolet ("UV") light that is faster than ethane, the compound reacts too close to the ground and consequently generates ozone and smog. Such compounds are defined as volatile organic compounds (VOCs). On the other hand, if a compound has a reaction rate that is slower than ethane, the compound reaches higher into the atmosphere before reacting with the hydroxyl radical and UV light. In such instances the non-VOC compound does not contribute to the formation of ground based ozone and smog.

Governmental regulations limit the use of VOCs in coatings, inks, and adhesives. As a result, water-borne coatings have become the most important type of coatings in coating and adhesive systems. However, water-borne coatings must contain some volatile organic compound content. This is because water flashes off too fast from the water-based latex or emulsion to make a good film. To alleviate this problem, 7% to 10% of a slower evaporating solvent such as a glycol ether is added to the latex to

aid in film formation. Unfortunately, glycol ethers are primary examples of VOCs and thus dangerous to the environment.

Use of a combination of a zero volatile compound with a highly reactive compound or with a low reactivity compound will reduce the overall VOC content of the mixture when used for the applications mentioned. Also, various low reactivity VOC solvents have been identified which when used with resins, will reduce the atmospheric reactivity of the coating, ink or adhesive. The low reactivity solvents can be blended with high reactivity solvents before mixing with a resin to lower the total reactivity of the formulation. Thus, the highly reactive compounds become less reactive than just a subtractive effect in some instances.

As such, Applicant respectfully submits that the present invention, as described above, will materially enhance the environmental quality of air by reducing the use of highly reactive VOC solvents, thereby reducing depletion of the atmospheric ozone.

In view of the above, Applicant believes the present application is entitled to be granted a special status under 37 C.F.R. § 1.102(c).

Respectfully submitted,

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